ARTICLE 12

WATER EFFICIENT LANDSCAPE ORDINANCE

Section	Subject Matter
10-12.01	AUTHORITY
10-12.02	PURPOSE
10-12.03	APPLICATION
10-12.04	DEFINITIONS
10-12.05	REVIEW AND APPROVAL REQUIREMENTS
10-12.06	PLANTING PLAN
10-12.07	IRRIGATION PLAN
10-12.08	LANDSCAPE WATER USE STATEMENT
10-12.09	SOILS REPORT
10-12.10	IRRIGATION SCHEDULE
10-12.11	CERTIFICATE OF SUBSTANTIAL COMPLETION
10-12.12	LANDSCAPE DESIGN STANDARDS
10-12.13	IRRIGATION DESIGN STANDARDS
10-12.14	EXCEPTIONS TO DESIGN STANDARDS
10-12.15	ADMINISTRATION AND APPEAL PROCESS

ARTICLE 12

WATER EFFICIENT LANDSCAPE ORDINANCE

SEC. 10-12.01 AUTHORITY. This article is enacted pursuant to California Government Code section 65591 et seq. and is a "water-efficient landscape ordinance" adopted by a local agency under the provisions of said article.

SEC. 10-12.02 PURPOSE. The City Council finds and declares that it is in the public interest to promote water efficient landscape design, installation, and management while ensuring that the aesthetic, functional, energy, and environmental benefits of landscaping are achieved. The purpose of the regulations set forth in this article is to establish standards for designing, installing, and maintaining water efficient landscapes in new and substantially altered or expanded existing development projects.

This article shall not preclude compliance with the landscaping performance standards contained in the Hayward Zoning Ordinance, that is, Article 1 of this chapter of the Hayward Municipal Code.

SEC. 10-12.03 APPLICATION. This article shall apply to all new and existing development projects that contain 2,500 square feet or more of new or renovated irrigated landscaped area, except that the following projects shall be exempt from this article:

a. Homeowner-provided landscaping for a single-family lot or for a private yard within a multi-family development;

b. Cemeteries;

c. Registered or City-designated historic districts, sites, and structures;

d. Ecological restoration projects that do not require a permanent irrigation system;

e. Landscaping that is irrigated solely with reclaimed water or well water, where an irrigation connection to the City water system is not proposed; and

f. Public parks and recreation areas, golf courses, and school playgrounds.

SEC. 10-12.04 DEFINITIONS. The terms used in this article shall be defined as follows:

a. Bubbler. An irrigation head that delivers water to the root zone by "flooding" the planted area, usually measured in gallons pursuant to minute. Bubblers exhibit a trickle, umbrella, or short stream pattern.

b. Conversion Factor (0.62). A number that converts the Landscape Water Allowance and Estimated Landscape Water Use from acre-inches per acre per year to gallons per square foot per year. The conversion factor is calculated as follows:

(325,829 gallons/43,560 square feet)/12 inches = (0.62)

325,829 gallons = one acre foot
43,560 square feet = one acre
12 inches = one foot

c. Drip Emitter. Drip irrigation fittings that deliver water slowly at the root zone of the plant, usually measured in gallons per hour.

d. Ecological Restoration Project. A project where the site is intentionally altered to establish a defined, indigenous, historic ecosystem.

e. Estimated Landscape Water Use or ELWU. The annual total amount of water estimated to be needed to keep the plants in the landscaped area healthy. It is based upon the local reference evapotranspiration rate, the size of the landscaped area, the types of plants, and the efficiency of the irrigation system, as described in section 10-12.08 b.

f. ET_o Adjustment Factor. A factor applied to reference evapotranspiration, that adjusts for plant factors and irrigation efficiency, two major influences upon the amount of water that needs to be applied to the landscape. For the purpose of this article, the plant factor shall be 0.5 and irrigation efficiency shall be 0.625. Therefore,

ET_o Adjustment Factor = (0.5/0.625) = 0.8

g. Evapotranspiration. The quantity of water evaporated from adjacent soil surfaces and transpired by plants during a specific time, expressed in inches per day, month, or year.

h. Extra-Drought Tolerant Plant. A plant that can survive without irrigation throughout the year once established, although supplemental water may be desirable during drought periods for improved appearance and disease resistance. Plants listed in Water-Conserving Plants and Landscape for the Bay Area (second edition), published by East Bay Municipal Utility District, that can tolerate "no water after second year" are examples of such plants.

i. Irrigated Landscaped Area. All portions of a development site to be improved with planting and irrigation. Natural open space areas shall not be included in the irrigated landscaped area.

j. Irrigation Efficiency. The measurement of the amount of water beneficially used by plants divided by the amount of water applied. Irrigation efficiency is derived from measurements and estimates of irrigation system characteristics and management practices.

k. Landscape Water Allowance or LWA. For design purposes, the upper limit of annual applied water for the established landscaped area as specified in section 10-12.08 a. It is based upon the local reference evapotranspiration rate, the ET_o Adjustment Factor, and the size of the landscaped area.

l. Landscape Zone. Portion of the landscaped area having similar microclimate and soil conditions and plants with similar water needs that are served by one or several

valves with a similar type of irrigation.

m. Non-Drought Tolerant Plant. A plant that will require regular irrigation for adequate appearance, growth, and disease resistance.

n. Plant Factor. A factor that, when multiplied by the reference evapotranspiration rate, estimates the amount of water used by plants.

o. Precipitation Rate. The depth of water applied to a given area, usually measured in inches per hour.

p. Rain Shut-Off Device. A device wired to the automatic controller that shuts off the irrigation system when it rains.

q. Reference Evapotranspiration Rate or ET_o. A standard measurement of environmental parameters which affect the water use of plants. ET_o is expressed in inches per day, month, or year and is an estimate of the evapotranspiration of a large field of four- to seven-inch tall, cool-season grass that is well watered. The historic ET_o for the Hayward area is approximately 42 inches per year.

r. Renovated Irrigated Landscaped Area. An existing landscaped area where:

(1) The existing planting and irrigation will be significantly redesigned and altered; and

(2) The appearance of the proposed landscaping will be substantially different from the existing landscaping or the approved landscaping plans on file with the City.

s. Spray Sprinkler. An irrigation head that sprays water through a nozzle.

t. Stream Sprinkler. An irrigation head that projects water through a gear rotor in single or multiple streams.

u. Turf. A surface layer of earth containing mowed grass with its roots.

v. Water-Conserving Plant. A plant that can generally survive with available rainfall once established, although supplemental irrigation may be needed or desirable during the spring and summer months. Examples of such plants are described in Water-Conserving Plants and Landscapes for the Bay area (second edition), published by the East Bay Municipal Utility District.

SEC. 10-12.05 REVIEW AND APPROVAL REQUIREMENTS.

a. Prior to issuance of a building permit for a project, or as otherwise specified in the planning approval for the project, the following landscaping documents shall be submitted for review and approval by the City Landscape Architect:

(1) Planting Plan;

(2) Irrigation Plan;

(3) Landscape Water Use Statement, except for developer-installed landscaping on single-family lots; and

(4) Soils report, if required pursuant to section 10-12.09 of this article.

If a project does not require a building permit or formal planning approval, the landscaping documents shall be submitted to the City Landscape Architect for review and approval prior to the commencement of site improvements.

b. Prior to issuance of a Certificate of Occupancy for a development project or upon completion of a landscaping project where a building permit is not required, the following landscaping documents shall be submitted to the City Landscape Architect for review and approval:

(1) Irrigation Schedule; and

(2) Certificate of Substantial Completion.

c. The documents listed in sections 10-12.05 a. and b. shall be prepared and signed by a landscape architect, landscape designer, or irrigation designer, except that the soils report shall be prepared by a qualified soil and plant laboratory. Additionally, the documents listed in section 10-12.05 b. may be prepared by a licensed landscape contractor.

SEC. 10-12.06 PLANTING PLAN. A detailed planting plan shall be drawn at a scale that clearly identifies the following:

a. Location of all proposed plant materials and a legend summarizing the botanical and common names, quantity, and size of plant materials;

b. Property lines and street names;

c. Existing and proposed buildings, structures, retaining walls, fences, utilities, paved areas, and other site improvements;

d. Existing trees and plant materials to be removed or retained;

e. Where landscaped areas exceed 10 percent slope, contour lines and spot elevations as necessary for the proposed finished grade;

f. Designation of landscape zones used to calculate the estimated landscape water use pursuant to section 10-12.08 b.;

g. Details and specifications for tree staking, soil preparation, and other applicable planting work; and

h. Where applicable, specifications for stockpiling and reapplying site topsoil or imported topsoil.

SEC. 10-12.07 IRRIGATION PLAN. A detailed irrigation plan shall be drawn at the

same scale as the planting plan and shall contain the following information:

a. Layout of the irrigation system and a legend summarizing the type and size of all components of the irrigation system, including manufacturer name and model numbers;

b. Static water pressure in pounds per square inch at the point of connection to the public water supply (or to a water well where applicable);

c. Flow rate in gallons per minute and design operating pressure in pounds per square inch for each valve; also, precipitation rate in inches per hour for each valve with sprinklers; and

d. Installation details for irrigation components.

SEC. 10-12.08 LANDSCAPE WATER USE STATEMENT. The Landscape Water Use Statement shall contain the following information:

a. Landscape Water Allowance. The Landscape Water Allowance for the site shall be calculated using the following formula:

LWA = (42 X 0.8 X 0.62)LA = 20.8 X LA, where

LWA = Landscape Water Allowance (gallons per year)

42 = Reference Evapotranspiration Rate (ET_o) for the Hayward area (inches per year)

0.8 = ET_o Adjustment Factor

0.62 = Conversion Factor (to gallons per square feet)

LA = Total Irrigated Landscaped Area (square feet)

b. Estimated Landscape Water Use. The ELWU for the site shall be based on the planting and irrigation plans prepared for the development project.

The total ELWU for a site shall consist of summing the ELWU for all landscape zones within the irrigated landscaped area. The ELWU for each landscape zone shall be calculated using the following formula:

$$ELWU = 26 \times \frac{PF}{IE} \times LZ$$, where

ELWU = Estimated Landscape Water Use (gallons per year)

26 = ET_o for Hayward area times Conversion Factor to gallons per square feet (42 inches per year X 0.62)

PF	=	Plant Factor
IE	=	Irrigation Efficiency
LZ	=	Area of Landscape Zone (square feet)

For the purpose of this article, the Plant Factor (PF) shall be the following for each type of plant material, which are based on an average density planting and average microclimate conditions:

Plant Type	Plant Factor (PF)
Fescue Turf	0.7
Non-Drought Tolerant Trees, Shrubs and Ground Cover	0.7
Water-Conserving Trees, Shrubs and Ground Cover	0.5
Extra Drought-Tolerant Trees, Shrubs and Ground Cover	0.2

For the purpose of this article, Irrigation Efficiency (IE) shall be the following for each type of irrigation:

Irrigation Type	Irrigation Efficiency (IE)
Bubblers	0.85
Drip Emitters	0.85
Stream Sprinklers in planter strips 8 feet or wider	0.75
Spray Sprinklers in planter strips 8 feet or wider	0.625
Sprinklers in planter strips less than 8 feet wide	0.4

An alternative Plant Factor or Irrigation Efficiency may be approved by the City Landscape Architect in calculating the ELWU if:

(1) The factors are based on a methodology or test data that has generally been endorsed or approved by the landscape profession; or

(2) Specific microclimate or soil conditions or landscape design elements warrant the adjustment of the factors.

SEC. 10-12.09 SOILS REPORT. A soils report may be required by the City Landscape Architect where irrigated landscaped areas exceed 10,000 square feet or where difficult soil or landscaping conditions exist at the project site. The soils report shall describe the depth, composition, fertility, and landscaping suitability of the soil at the project site, and shall include recommendations for soil amendment, fertilizer, and other items as needed. The planting plan shall incorporate the recommendations of the soil report into the planting specifications.

SEC. 10-12.10 IRRIGATION SCHEDULE. A monthly irrigation schedule shall be prepared that covers the initial 90-day plant establishment period and the following one year period. This irrigation schedule shall consist of a table with the following information for each valve:

a. Plant type (for example, turf, trees, water-conserving plants, non-drought tolerant plants);

b. Irrigation type (for example, sprinklers, drip, or bubblers);

c. Flow rate in gallons per minute;

d. Precipitation rate in inches per hour (for valves with sprinklers only);

e. Run times in minutes per day; and

f. Number of watering days per week.

The irrigation schedule shall rely on the Estimated Landscape Water Use determined in section 10-12.08 b. and monthly ET_o data for the Hayward area. The irrigation schedule may also be based on a landscape irrigation audit. The amount of water applied per valve shall be adjusted as necessary for irrigation efficiency, local rainfall, microclimate conditions, depth of root zone, soil conditions, and slope.

SEC. 10-12.11 CERTIFICATE OF SUBSTANTIAL COMPLETION. The Certificate of Substantial Completion shall indicate that:

a. The landscaping has been installed in substantial conformance to the approved planting and irrigation plans and specifications;

b. The automatic controller has been set according to the irrigation schedule for the plant establishment period;

c. The irrigation system has been adjusted to maximize irrigation efficiency and minimize overspray and runoff; and

d. A copy of the irrigation schedule has been given to the property owner.

SEC. 10-12.12 LANDSCAPE DESIGN STANDARDS.

a. Landscape Water Use. The Estimated Landscape Water Use shall not exceed the Landscape Water Allowance as determined in sections 10-12.08 a. and b.

This standard shall not apply to developer-installed front yard landscaping on single-family lots. However, when a single-family project contains three or more

landscaped model homes, at least one model shall comply with the above standard, with signs and information demonstrating water-efficient landscaping methods.

b. Plant Selection. Plants selected for non-turf areas shall consist of plants that are well-suited to the microclimate and soil conditions at the project site. Plants with similar water needs shall be grouped together as much as possible.

For projects located at the interface between urban areas and natural open space, water-conserving plants shall be selected that will blend in with the native vegetation and are fire resistant or fire retardant. Plants with low fuel volume or high moisture content shall be emphasized. Plants that tend to accumulate an excessive amount of dead wood or debris shall be avoided.

Slope areas shall be landscaped with deep-rooting, water-conserving plants for erosion control and soil stabilization.

c. Turf Limitation and Type. Turf shall be a variety with a water requirement less than or equal to Tall Fescue. Exceptions may be granted where turf will be added contiguous to an existing turf area.

Turf shall not be installed on slopes exceeding 15 percent, unless justified to match existing conditions or surrounding development.

Developer-installed front yard landscaping on single-family lots shall be limited to 50 percent turf.

d. Mulch. After completion of all planting, all irrigated non-turf areas shall be covered with a minimum two-inch layer of wood chip or bark to retain water, inhibit weed growth, and moderate soil temperature. Non-porous material shall not be placed under the mulch.

SEC. 10-12.13 IRRIGATION DESIGN STANDARDS.

a. All irrigation systems shall include a electric automatic controller with multiple program and multiple repeat cycle capabilities and a flexible calendar program.

b. On slopes exceeding 25 percent or 4:1 grade, the irrigation system shall consist of drip emitters, bubblers, or sprinklers with a maximum precipitation rate of 0.85 inches per hour.

c. Each valve shall irrigate a landscape zone with similar site, slope and soil conditions and plant materials with similar watering needs. Turf and non-turf areas shall be irrigated on separate valves. Drip emitters and sprinklers shall be placed on separate valves.

d. Drip emitters or a bubbler shall be provided to each tree. Bubblers shall not exceed 1.5 gallons per minute per device. Bubblers for trees shall be placed on a separate valve unless specifically exempted by the City Landscape Architect due to the limited number of trees on the project site.

e. Sprinklers shall have matched precipitation rates within each control valve circuit.

f. Sprinklers located next to paving shall be pop-up heads. Pop-up heads shall have a minimum 4-inch height in turf areas and a minimum 6-inch height in ground cover areas.

g. Check valves shall be required where elevation differences will cause low-head drainage. Pressure compensating valves and sprinklers shall be required where a significant variation in water pressure will occur within the irrigation system due to elevation differences.

h. Spacing of sprinklers shall not exceed 1.0 times the radius of the head for square spacing and 1.2 times the radius of the head for triangular spacing. The irrigation system shall be designed for minimum run-off and overspray onto non-irrigated areas.

i. A rain shut-off device shall be installed to prevent irrigation during rainy weather.

j. A pressure regulator shall be provided when the static water pressure exceeds the maximum recommended operating pressure of the irrigation system.

k. Drip irrigation lines shall be undergrounded, except for emitters and where approved as a temporary installation. Filters and end flush valves shall be provided as necessary.

l. Valves with spray or stream sprinklers shall be scheduled to operate between 9 p.m. and 8 a.m. to reduce water loss from wind and evaporation.

m. Program valves for multiple repeat cycles where necessary to reduce runoff, particularly on slopes and soils with slow infiltration rates.

SEC. 10-12.14 EXCEPTIONS TO DESIGN STANDARDS. Exceptions to the landscaping and irrigation standards contained in sections 10-12.12 and 10-12.13 may be granted by the City Landscape Architect where:

a. Unique soil, site conditions, or design constraints render compliance with certain standards infeasible;

b. The functional or recreational purpose of the landscaping warrants exceptions to specific standards; or

c. Alternative water-efficient design techniques or materials are proposed to justify exceptions to specific standards.

SEC. 10-12.15 ADMINISTRATION AND APPEAL PROCESS. The City Landscape Architect or designee shall have the duty and authority to administer and enforce this article.

The City Landscape Architect's action to approve, conditionally approve, or disapprove landscaping documents required under this article may be appealed to the Board of Adjustments by the property owner or applicant by filing a written request with the Planning Department within 15 days of the date of written notification of said action. The matter shall be

scheduled before the Board of Adjustments in a timely manner. The Board of Adjustments may approve, modify, or reverse the action of the City Landscape Architect. The action of the Board of Adjustments shall be final.